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EXAMINER	
POKRZYWA, JOSEPH R	

ART UNIT	PAPER NUMBER
2622	6

DATE MAILED: 03/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/425,225	Applicant(s) SAITO, HIROYUKI	
	Examiner Joseph R. Pokrzywa	Art Unit 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 January 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 12-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 12-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment was received on 1/5/04, and has been entered and made of record. Currently, **claims 1-7, and 12-20** are pending.

Response to Arguments

2. Applicant's arguments regarding the newly amended **claims 1-7 and 12-20**, see pages 11 and 12, filed 1/5/04, with respect to the rejection of independent **claims 1, 2, 4, 5, 12, 16, and 17** under 35 U.S.C. 102(b), as being anticipated by Yokoi *et al.* (U.S. Patent Number 4,742,287), have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Isozaki (U.S. Patent Number 6,141,110), with a full discussion appearing below.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. **Claims 1-7, and 12-18** are rejected under 35 U.S.C. 102(e) as being anticipated by Isozaki (U.S. Patent Number 6,141,110).

Regarding ***claim 1***, Isozaki discloses a recording apparatus provided with a stepping motor as an actuator (see abstract), comprising storage means (RAM 130) for storing and holding information regarding a final exciting phase of the stepping motor upon entering a software power off state in which consumption of electrical power of the recording apparatus is restricted (being a "pause mode", which is a power off state in the "recording mode", as the stepping motor is stopped, shown in step S30 in the stepping motor control routine seen in Fig. 4, column 5, lines 28 through 40), and control means (CPU 110) for starting excitation of the stepping motor based on the information regarding the final excitation phase, read out from the storage means (column 5, lines 41 through 52, being "yes" in step S50, occurring when recording is restarted), instead of performing phase alignment of the stepping motor, when the recording apparatus restarts from the software power off state (column 5, lines 52 through 62, being "no" in S50, occurring when recording is restarted).

Regarding ***claim 2***, Isozaki discloses a recording apparatus provided with a stepping motor as an actuator (see abstract), comprising storage means (RAM 130) for storing and holding information regarding a final exciting phase of the stepping motor (excitation phase data) and information regarding a termination status (excitation phase counter MPC, column 4, line 62 through column 5, line 11) indicating the presence/absence of abnormality (column 5, lines 43 through 58, whereby when the MPC is at "2", "3", or "4", an abnormality is indicated, since the recording operation are fixed to A-B phases, having a MPC of "1", see Fig. 2) at the time of entering a software power off state (being a "pause mode", which is a power off state in the "recording mode", as the stepping motor is stopped, shown in step S30 in the stepping motor control routine seen in Fig. 4, column 5, lines 28 through 40), and control means (CPU 110) for,

when the recording apparatus restarts from the software power off state, starting excitation of the stepping motor based on the information regarding the final exciting phase, read out from the storage means, without performing phase alignment of the stepping motor when the information regarding the termination status is normal (column 5, lines 41 through 52, being "yes" in step S50, occurring when recording is restarted), and performing phase alignment of the stepping motor when the information regarding the termination status is abnormal (column 5, lines 52 through 62, being "no" in S50, occurring when recording is restarted).

Regarding ***claim 3***, Isozaki discloses the apparatus discussed above in claim 2, and further teaches that the control means starts the phase alignment of the stepping motor based on the information regarding the final exciting phase when the information regarding the termination status is abnormal (column 5, lines 43 through 62, whereby when the MPC is at "2", "3", or "4", an abnormality is indicated, therein being "no" in S50).

Regarding ***claim 4***, Isozaki discloses a recording apparatus provided with driving means for driving a member to be driven as a driving source for a stepping motor (see abstract), comprising storage means (RAM 130) for storing and holding information regarding a final exciting phase of the stepping motor upon entering a software power off state in which consumption of electrical power by the recording apparatus is restricted (being a "pause mode", which is a power off state in the "recording mode", as the stepping motor is stopped, shown in step S30 in the stepping motor control routine seen in Fig. 4, column 5, lines 28 through 40), a sensor (excitation phase counter MPC), the sensor detecting whether the driven member moves by a predetermined number of pulses when the predetermined number of pulses is applied to the stepping motor at a standby position (column 5, lines 4 through 40, when the apparatus is placed

in the "pause mode"), and control means for applying the predetermined number of pulses based on the information regarding the final exciting phase, read out from the storage means, instead of performing phase alignment of the stepping motor when the recording apparatus restarts from the software power off state, when the sensor detects movement by the predetermined number of pulses (column 5, lines 41 through 52, being "yes" in step S50, occurring when recording is restarted), and for performing phase alignment of the stepping motor when the sensor does not detect movement by the predetermined number of pulses (column 5, lines 52 through 62, being "no" in S50, occurring when recording is restarted).

Regarding ***claim 5***, Isozaki discloses a recording apparatus provided with driving means for driving a member to be driven as a driving source for a stepping motor (see abstract), comprising storage means (RAM 130) for storing and holding information regarding a final exciting phase of the stepping motor upon entering a software power off state in which consumption of electrical power by the recording apparatus is restricted (being a "pause mode", which is a power off state in the "recording mode", as the stepping motor is stopped, shown in step S30 in the stepping motor control routine seen in Fig. 4, column 5, lines 28 through 40), a sensor (excitation phase counter MPC), the sensor detecting a rotation amount or a corresponding value of the stepping motor during the software power off state (column 5, lines 4 through 40, when the apparatus is placed in the "pause mode"), and control means (CPU 110) for determining, when the recording apparatus restarts from the software power off state, an excitation phase corresponding to a position of a rotor of the stepping motor at the time of the restart, based on the rotation amount of the stepping motor detected by the sensor and the information regarding the final exciting phase read from the storage means (column 5, lines 41

through 52, being "yes" in step S50, occurring when recording is restarted), and starting the excitation of the stepping motor from the determined excitation phase instead of performing phase alignment of the stepping motor (column 5, lines 52 through 62, being "no" in S50, occurring when recording is restarted).

Regarding ***claim 6***, Isozaki discloses the apparatus discussed above in claim 1, and further teaches that the recording apparatus is a serial type recording apparatus (see abstract, and column 4, lines 4 through 64).

Regarding ***claim 7***, Isozaki discloses the apparatus discussed above in claim 6, and further teaches that the stepping motor is one of a carriage driving motor, a print medium conveying motor, a print medium feeding motor, and a motor for driving a recording head maintenance mechanism (see abstract, and column 5, line 17 through column 6, line 22).

Regarding ***claim 12***, Isozaki discloses a recording apparatus provided with a stepping motor as an actuator (see abstract), comprising means (drive circuit 150) for changing an exciting phase of the stepping motor to step-drive the stepping motor (column 4, lines 13 through 21), means (RAM 130) for storing and holding information regarding a final exciting phase of the stepping motor upon entering a software power off state in which consumption of electrical power by the recording apparatus is restricted (being a "pause mode", which is a power off state in the "recording mode", as the stepping motor is stopped, shown in step S30 in the stepping motor control routine seen in Fig. 4, column 5, lines 28 through 40), and means (CPU 110) for starting excitation of the stepping motor based on the information regarding the final exciting phase stored in the storage means at the time of restarting from the software power off state of

the apparatus (column 5, lines 41 through 62, wherein step S50 occurs when recording is restarted).

Regarding ***claim 13***, Isozaki discloses the apparatus discussed above in claim 12, and further teaches that the apparatus comprises means for aligning a mechanical phase of the stepping motor and an electrical phase when the apparatus is at a hardware power off state (column 5, lines 48 through 62, wherein the recording head 41 does not start until the phases are aligned).

Regarding ***claim 14***, Isozaki discloses the apparatus discussed above in claim 13, and further teaches of additional storage means for storing a termination status (excitation phase counter MPC, column 4, line 62 through column 5, line 11) indicating a presence/absence of an abnormality (column 5, lines 43 through 58, whereby when the MPC is at "2", "3", or "4", an abnormality is indicated, since the recording operation are fixed to A-B phases, having a MPC of "1", see Fig. 2) upon entering a software power off state in which consumption of electrical power of the recording apparatus is restricted (being a "pause mode", which is a power off state in the "recording mode", as the stepping motor is stopped, shown in step S30 in the stepping motor control routine seen in Fig. 4, column 5, lines 28 through 40), wherein at the time of restarting from the software power off state of the apparatus, the control means starts the excitation of the stepping motor based on the information regarding the final exciting phase stored in the storage means without performing the phase alignment by the phase alignment means when the additional storage means stores a normal termination status (column 5, lines 41 through 52, being "yes" in step S50, occurring when recording is restarted), and starts excitation of the stepping motor after the phase alignment means performs the phase alignment when the

additional storage means stores an abnormal termination status (column 5, lines 52 through 62, being "no" in S50, occurring when recording is restarted).

Regarding ***claim 15***, Isozaki discloses the apparatus discussed above in claim 14, and further teaches that the control means starts the phase alignment by the phase alignment means based on the information regarding the final exciting phase stored in the storage means when the additional storage means stores an abnormal termination status (column 5, lines 43 through 62, whereby when the MPC is at "2", "3", or "4", an abnormality is indicated, therein being "no" in S50).

Regarding ***claim 16***, Isozaki discloses a recording apparatus provided with a stepping motor as an actuator (see abstract), comprising means (drive circuit 150) for changing an exciting phase of the stepping motor to step-drive the stepping motor (column 4, lines 13 through 21, and column 4, line 50 through column 5, line 17), means (RAM 130) for storing and holding information regarding a final exciting phase of the stepping motor upon entering a software power off state in which consumption of electrical power by the recording apparatus is restricted (being a "pause mode", which is a power off state in the "recording mode", as the stepping motor is stopped, shown in step S30 in the stepping motor control routine seen in Fig. 4, column 5, lines 28 through 40), means (CPU 110) for aligning a mechanical phase of the stepping motor and an electrical phase stored in the storage means (column 5, lines 48 through 62), a driven member (rotor 13) driven by the stepping motor (column 5, lines 18 through 22), a sensor (excitation phase counter MPC), the sensor detecting whether the driven member moves by a predetermined number of pulses from a standby position of the member (column 5, lines 4 through 40, when the apparatus is placed in the "pause mode"), and means for starting excitation

of the stepping motor based on the information regarding the final exciting phase stored in the storage means to drive the driven member by the predetermined number of pulses at the time of restarting from the software power off state of the apparatus (column 5, lines 41 through 52, being "yes" in step S50, occurring when recording is restarted), without performing the phase alignment by the phase alignment means when the sensor detects that the driven member is moved by the predetermined number of pulses (column 5, lines 4 through 62), and performing the phase alignment by the phase alignment means when the sensor detects that the driven member is not moved by the predetermined number of pulses (column 5, lines 52 through 62, being "no" in S50, occurring when recording is restarted).

Regarding ***claim 17***, Isozaki discloses a recording apparatus provided with a stepping motor as an actuator (see abstract), comprising means (drive circuit 150) for changing an exciting phase of the stepping motor to step-drive the stepping motor (column 4, lines 13 through 21), a sensor (excitation phase counter MPC), the sensor detecting a value corresponding to a rotating amount of the stepping motor (column 5, lines 4 through 40) during a software power off state in which consumption of electrical power by the recording apparatus is restricted (being a "pause mode", which is a power off state in the "recording mode", as the stepping motor is stopped, shown in step S30 in the stepping motor control routine seen in Fig. 4, column 5, lines 28 through 40), means (RAM 130) for storing and holding information regarding a final exciting phase of the stepping motor at the time the apparatus enters the software power off state (column 5, lines 28 through 40, when the apparatus is placed in the "pause mode"), changing means (drive circuit 150) for changing the information regarding the final exciting phase stored in the storage means in accordance with a value detected by the sensor (column 4, lines 13 through 21,

and column 5, line 48 through column 6, line 5), and means for at the time of restarting from the software power off state of the apparatus, starting excitation of the stepping motor based on the information regarding the exciting phase stored in the storage means (column 5, lines 41 through 62, wherein step S50 occurs when "recording" is restarted).

Regarding ***claim 18***, Isozaki discloses the apparatus discussed above in claim 1, and further teaches that the phase alignment of the stepping motor is performed in a manner so that the stepping motor is driven by a predetermined number of pulses at a self-starting region of the stepping motor as a driving region and the mechanical phase and the electrical phase of the stepping motor are identical (see abstract, and column 4, line 50 through column 5, line 62).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. **Claims 19 and 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Isozaki (U.S. Patent Number 6,141,110) in view of Cronch *et al.* (U.S. Patent Number 4,706,008)

Regarding ***claims 19 and 20***, Isozaki discloses the apparatus discussed above in claims 1 and 12, respectively, but fails to particularly teach if the storage means is a non-volatile memory. Cronch discloses a recording apparatus provided with a stepping motor as an actuator (see abstract), comprising storage means (phase state storage 125) for storing and holding information regarding a final exciting phase of the stepping motor upon entering a software power off state in

which consumption of electrical power of the recording apparatus is restricted (see abstract, and column 2, line 4 through column 3, line 27). Further, Cronch teaches that the storage means is a non-volatile memory (column 2, lines 47 through 64, and column 7, lines 29 through 40). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the teachings of Cronch in the system of Isozaki. The system of Isozaki would easily be modified to incorporate the non-volatile memory taught by Cronch, since the systems share cumulative features, being additive in nature, and since non-volatile memories are widely known and commonly used throughout the art, as recognized by Cronch, thereby being capable of retaining phase state information during a loss of power.

Citation of Pertinent Prior Art

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Sugai *et al.* (U.S. Patent Number 6,075,336) discloses a drive mechanism for a stepping motor in a printer.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joe Pokrzywa whose telephone number is (703) 305-0146. The examiner can normally be reached on Monday-Friday, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward L. Coles can be reached on (703) 305-4712. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Joseph R. Pokrzywa
Examiner
Art Unit 2622

jrp

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